LINCOLN NATIONAL FOREST

MONITORING AND EVALUATION REPORT

Fiscal Year 1997

1. FOREST SUPERVISOR'S CERTIFICATION THAT THE PLAN IS SUFFICIENT OR PROPOSED CHANGES TO THE PLAN.

Plan Amendment Needs

Since implementation of the Lincoln's Land and Resource Management Plan in 1986, four corrections and nine amendments have been completed, including the Region 3 amendment to incorporate Mexican spotted owl and Northern goshawk management direction. The Lincoln National Forest is scheduled to begin Plan Revision during Fiscal Year 1998 and complete it by 2001. Unless this schedule is altered, there is only one new Plan amendment identified at this time. Changing social conditions in and around the community of Timberon, New Mexico, prompted the Lincoln to submit a Forest highway proposal to the Federal Highway Administration to improve the surface and location of the Sacramento River Road. The proposal was accepted, is being analyzed in an Environmental Impact Statement (EIS), and may result in a Forest Plan amendment. Other changes identified during this monitoring and evaluation cycle are discussed in the following section.

Forest Plan Changes needed at Plan Revision

Human Dimension - A number of trends are occurring in the Southwest that affect Forest Plan direction, goals, and objectives. Demographics are shifting to an older population, and there will be a continually increasing influx of people of all ages from outside the area. This trend includes an overall transition from a public which desires emphasis on commodity-oriented products and services, to a public which wants programs and program delivery to be amenity-oriented. Results of this shift will include an increase in the kind and number of recreation opportunities, accessibility to all publics, and an ever-increasing sensitivity to macro- and micro-environmental issues.

The existing Forest Plan does not adequately reflect this social trend. Although Plan implementation has been flexible in meeting many of society's changing needs, the increase in administrative appeals and litigation demonstrate that Plan direction can be improved to guide resolution of many of these issues. Plan Revision will assess this situation, and these issues will be addressed at that time.

Specific human dimension program areas needing analysis and possible modification at Plan Revision are:

- Transportation System
  - What roads and trails will be available for public use or additional resource needs?
  - What uses will be allowed and are we considering all uses to protect resources?
  - What rights-of-way are needed?
- Public land use, land exchanges, and special uses
- Allowable Sale Quantity of wood products
- Recreation Opportunities
  - Are our developed recreation sites adequate in kind and number?
  - Is our variety and number of dispersed recreation opportunities adequate?
  - What are our existing and future maintenance obligations?
- Heritage Resource Management
  - National Register sites established since 1986 need to be incorporated
  - Standards and guidelines developed since 1986 need to be incorporated as appropriate.

Physical/Biological Dimensions - The evolution toward an ecosystem management approach has renewed the Lincoln's sensitivity to ecological issues. Coupled with human dimension trends, this situation has brought needed Plan modifications to the forefront. An increase in the number of threatened and endangered plants and animals, increased knowledge of the function, processes, and interrelationship of ecosystems, and recognition that thresholds exist beyond which those systems may no longer be sustainable are foundation concepts upon which Plan Revision will be built.

Specific Plan modifications to be considered during Plan Revision are:

Watershed
- Ecological objectives need to be strengthened.
- Proper functioning conditions need to be identified.
- Standards and guidelines need to be clear and achievable.
- Water rights need to be more clearly addressed.
- Riparian management needs to be more clearly addressed.

Fire
- Natural fire needs to be brought back into appropriate ecosystems.
- Prescribed natural fire needs to be more clearly addressed.
- Wildland-urban interface needs to be emphasized.

Range and Wildlife
- Elk and livestock management needs to be re-assessed.

Noxious weeds
- Progress needs to be incorporated.

Forest health
What areas have the most urgent resource needs?
What tools can be used to address these needs?

TE&S plants and animals
- Will we continue focus on single-species management?
- How can we continue to keep plants and animals from becoming threatened or endangered?
- Can plans be coordinated for more efficient recovery of various species?

2. SUMMARY OF MONITORING ACTIVITIES, INCLUDING REVIEWS AND OTHER ADMINISTRATIVE ACTIVITIES.

Administrative/Operational - Program oversight and quality control are provided by the Supervisor's Office Staff in approving Biological Assessment and Evaluations (BA&E's) for Forest Supervisor decisions, and all heritage resource clearances. The Forest's key contact list is reviewed and updated at least annually. Road, bridge, and dam maintenance monitoring is ongoing (see "partnerships"). Unit safety reviews are conducted annually, and include wildfire response readiness and aircraft checks. Hazardous waste was discovered in Panama Cave. The Forest monitored the contractor for proper equipment and waste disposal. Additional monitoring will include testing contaminant levels, warning signs and monitoring bat habitat. This situation has lead us to survey other caves for potential dump sites.

Road conditions are monitored by the engineering department and district personnel. Condition surveys contain the necessary documentation to plan for maintenance, closures, and obliteration. Road obliteration is monitored for effectiveness. Much of the monitoring is done on an informal basis. Several years of monitoring of Highway 82 has resulted in a rockfall study. The amount of rockfall on the Highway has had both a social and economic impact on the area. The Lincoln's Facilities Master Plan contains guidance for inspecting all facilities, resulting in actions needed to remedy problems identified.

Recreation technicians and campground hosts provide feedback from the public. For example, the stay limit was changed in the campgrounds based upon public input. Ski Apache is monitored via the snow ranger. Other operational monitoring includes wilderness patrols, inspecting the condition of road and trail signs, using volunteers to provide feedback on trail conditions. Permitted-use sites such as electronic sites are inspected periodically. Cave volunteers are inspecting and

reporting cave conditions.

Baseline/Inventories - Air quality baseline information for the Tularosa Basin has been collected for two years using photo comparisons from a camera permanently mounted in the White Mountain Wilderness. Stream cross sections and proper functioning conditions are being collected for the Rio Penasco. Baseline and existing condition information are being collected in cooperation with the New Mexico Environment Department for Fresnal and La Luz Canyons to determine attainment of designated State water quality uses. Proper functioning conditions of watersheds within the Sid West area were conducted. Rio Ruidoso water quality information is being collected to support possible improvements in the Ski Apache area parking lot. Last Chance Canyon sites were assessed for proper functioning conditions and visual effects to assess changes in management. In cooperation with the New Mexico Environment Department, the Lincoln identifies existing and potential nonpoint source water pollution on National Forest system lands. Water quality monitoring is coordinated and results are shared. These monitoring and cooperative efforts have resulted in Clean Water Act 319 grants for watershed improvement on Forest Service lands (e.g. the work in the Fresnal and La Luz Canyons mentioned above). Vegetation data is being collected for each ranger district. This information is being used to determine existing conditions for support to wildland urban interface and forest health projects, salvage sales, Mexican spotted owl thresholds at the landscape level, and Forest Plan Revision preparation. Thirty-two thousand acres were surveyed to determine vegetative conditions. Photo and video plots documenting visual and vegetation conditions are recorded on maps and tracked in the RMRIS database and GIS. Photo-history is also used to document damage to cave formations, and identify restoration work.

Threatened, endangered, and sensitive species are surveyed for project and program monitoring requirements (e.g. Mexican spotted owl recovery plan), as well as to provide planning information during project analysis. Key species were surveyed in 1997.

Range conditions are being re-surveyed on the Sacramento Allotment winter and summer range to help resolve use-level issues with permitees and Otero County.

Excavation and core drilling in caves have allowed the Forest to analyze prehistoric bone and pollen material. Results will provide information on presettlement vegetation and fire regimes. Heritage resource surveys are conducted to locate historic and prehistoric sites (per Section 110, National Historic Preservation Act). Many of these surveys are carried out under the Passports in Time Program, giving the public an opportunity to participate.

Implementation - Periodic field visits to project areas normally result in informal monitoring and evaluation of actions needed. Documentation is often captured on the Forest monitoring forms.

Recreation facility construction projects include post-occupancy reviews to ensure contract work meets specifications, EA requirements, and to monitor how well the design has met the needs of users. Such reviews were performed at Three Rivers Campground and Haynes Vista.

Sikes program projects are monitored after completion and are put on an annual monitoring schedule. They are visited annually to check implementation work, take photos, and document project effectiveness.

Fuelwood monitoring includes field checking for "leave" trees and assessing how the public is harvesting. Monitoring information is considered in determining cleanup efforts needed for fuelwood areas, and cleanup efforts are monitored. On-site visits are often documented on Forest Monitoring and Evaluation sheets. Recommendations and actions by the person monitoring are normally documented. Pre-commercial thinning and salvage sale activities include post-sale inspections. Areas are examined to ensure contract requirements are met, and results documented in the RMRIS database.

Effectiveness - Effectiveness monitoring is done after road closure or road

obliteration to determine if methods used were effective. Documentation can be found in the daily maintenance logs. This information and district feedback is evaluated, and changes to closure or obliteration techniques are determined.

Listed and sensitive plant species are monitored not only for location or potential sites but before and after management activities when present.

Forest monitoring forms are used to document damage, erosion, and changed conditions for pre-recorded heritage resource sites.

Vegetation treatments, including Christmas tree cutting, receive post-treatment monitoring to assess their effectiveness. Areas of natural regeneration are also inspected for rate of success.

Prescribed fire treatments are monitored through on-site visits. How well objectives have been met (i.e. reducing canopy cover of the pinyon-juniper and increasing forbes) is evaluated and documented. Recommendations and follow-up actions are determined.

A portion of the Forest's projects are inspected upon completion to verify that flagged archaeological sites are avoided. In addition, sites are periodically inspected to monitor conditions, and to ensure they were protected by previous projects. Site monitoring forms are kept on file.

Validation - The Forest is validating data manipulation assumptions used for RMRIS stand information, Mexican spotted owl recovery plan information, and information used in the Region 3 Plan Amendment. In cooperation with Northern Arizona University, the Forest is testing various land stratification schemes for entry into the SPECTRUM model. Other data relationship testing includes Mexican spotted owl threshold conditions and old-growth attributes. For other validation monitoring, see "research" section. In 1997, the Forest emphasized validation of the required Regional geographic information systems themes.

3. DISCUSSION OF HOW WELL THE FOREST IS ACHIEVING SOCIAL, ECONOMIC, AND ECOLOGICAL PLAN OBJECTIVES.

Pages 11 to 14 of the Forest Plan contain the major goals for management direction of Chapter 4. A goal is defined as "concise statement of the state or condition that a land and resource management plan is designed to achieve. A goal is usually not quantifiable and may not have a specific date for completion" (36 CFR 219.3). The following discussion of the 1997 monitoring and evaluation report will focus on Forest Plan goals. The 1998 and subsequent monitoring and evaluation reports may provide more detailed discussions concerning Forest Plan objectives.

Social - Major social goals for the Lincoln National Forest Plan include managing for a variety of developed and dispersed recreation experiences, provide a system of roads and trails for motorized recreation use, provide wild caving experiences, protect and manage heritage resources, emphasize visual resources, manage for a favorable flow of water for users, protect life, property and resources from wildfire, and respond to public needs for access through and use of National Forest lands.

Although social trends have shifted use from commodity to amenity, Plan implementation has been dynamic and has allowed us to meet most of the social shifts from the time the Plan was written. Trends for which the Forest has not been able to shift successfully are easily identified through recent litigation. Issues and trends not adequately addressed by the Plan or Plan implementation are discussed in Section 1 and 6, and will not be repeated in this section.

A variety of developed and dispersed recreation opportunities has been enhanced through reconstruction of the Silver Ampitheater; Three Rivers and South Fork Campgrounds; Sitting Bull Falls day-use area; School House and Cedar Creek picnic

grounds; and the Tunnel, Windy Point, and Haynes Canyon vistas developed recreation sites. Many of these facilities have been redesigned to accommodate accessibility for an older population of Forest users. This includes maintaining roads at higher maintenance levels, better signing, and designing facility parking lots for larger recreation vehicles. The Trestle Recreation site was constructed and takes advantage of the proximity to the Mexican Canyon Trestle to interpret the Cloudclimbing Railroad of the early 1900s.

The Lincoln's transportation system improvements include using partnership with Counties to increase management effectiveness using RS 2477 opportunities to change jurisdiction of roads when requested by Counties and sharing maintenance activities, working to provide safer and faster access to Timberon (Sacramento River Road project), and coordinating with Alamogordo area residents to assess access through newly developed private land holdings.

Wild caving opportunities increased as a result of higher public visibility of the program, a Forestwide Cave Management Plan, and recent opportunities to implement fee programs.

Twenty eight sites have been listed on the National Register of Historic Places. Interaction with American Indian Tribes has increased through consultation with the Mescalero, Hopi and Zuni Tribes and the Mescalero Tribe's recent addition of an historic preservation officer.

Managing the wildland-urban interface has been emphasized and programs have been established with Ruidoso and Cloudcroft. The interagency Lincoln Zone Dispatch continues to serve the Lincoln and surrounding areas with wildfire suppression resources in partnership with the National Park Service, Bureau of Land Management, Bureau of Indian Affairs, and New Mexico Forestry Division.

Examples of achieving other land-use Plan goals include the Lincoln's partnership with Cloudcroft in designating Townsite Act areas, and with Cloudcroft Schools in completing a land exchange for school expansion. The Sunspot Visitor Center was designed and constructed through interagency and community coordination. Several camps on the Forest are used by the scout troops and church groups.

Economic - Major economic Forest Plan goals include, produce livestock forage, encourage opportunity for private sector to meet part of recreation demand, accommodate energy and minerals exploration and development, provide opportunities to satisfy local demand for Forest resources, provide a sustained yield of quality timber and fuelwood, and authorize, by means of permit, use of National Forest land by private or commercial interests when private land is not available.

Recreation and tourism has increased and boosted the economies of Cloudcroft and Ruidoso. Forest facility improvements such as the Trestle Recreation Area, vistas, and the Sunspot Visitor Center have enhanced tourism and brought dollars into the communities.

Oil and gas leasing has increased on the Guadalupe Ranger District and is showing a direct financial return to the counties.

The quality and quantity of the fuelwood has been maintained near to the expected Plan level. However, supply for sawtimber products has not met Plan expectations. Sawtimber volume has decreased to one or two million board feet per year, well below the allowable sale quantity of 15 million board feet. The causes for this discrepancy is discussed in Sections 1 and 6. White Sands Forest Products of Alamogordo has been greatly impacted.

Ecological - Major ecological Forest Plan goals include, minimize impacts of insects and disease on resources, perpetuate aspen species, allow fire to play a natural role, manage air quality in conformance with the Clean Air Act, provide for a diversity of plant and animal species, improve habitat for threatened and endangered species, provide for management of sensitive species, bring permitted grazing use in balance with forage allocated for use by domestic livestock, preserve and protect

cave resources, maintain water quality and quantity, maintain on-site soil loss within established tolerance levels, and manage riparian areas to provide optimum vegetation and ecological diversity.

Forest Plan goals for forest health, especially treatment for insects and disease, have not been met. The mixed conifer and ponderosa pine forests continue to display unnaturally high levels of infestation due to historic lack of natural fire and more recent lack of silvicultural treatments. These forest conditions present a threat of catastrophic wildfire and increased insect and disease occurrence over broader landscapes. Progress has been made in the woodland and grassland ecosystem through the reintroduction of fire.

A number of new species has been listed as threatened or endangered since Plan implementation, and these species are being protected through project design features. Recovery plans have been completed for several species and provide direction to enhance their habitats. Coordination with universities and the US Fish and Wildlife Service and proactive management have prevented the listing of several species, such as the Sacramento Mountain salamander.

Improved range conditions have resulted from the implementation of structural and nonstructural improvements, and more intensive management developed in allotment management plans. The Burns Amendment schedule will help continue this type of improvement. However, these actions are sometimes negated through decreased range conditions resulting from increased pinyon/juniper canopy closure and the resulting degradation of watershed function.

Watershed condition has been improved through the reintroduction of fire and woodland thinning projects. Road obliteration and road closure has helped restore watershed function through soil stabilization and vegetation establishment. Roads have been moved out of bottomlands where feasible and riparian function has been improved with structural and nonstructural improvements. Proper functioning condition of watersheds has been assessed for a number of watersheds, and is on-going.

4. DISCUSSION OF HOW WELL MONITORING REQUIREMENTS FOR OTHER LAWS (CLEAN WATER ACT, CLEAN AIR ACT, ENDANGERED SPECIES ACT (ESA), ETC.) ARE BEING MET.

Clean Water Act - The Forest works closely with New Mexico Environment Department to ensure State water quality standards are maintained. All ground-disturbing projects employ Best Management Practices (BMPs).

Clean Air Act - Special project design requirements are agreed upon by Sunspot National, Apache Point, and other observatories to ensure air quality remains within the high standards needed for solar and stellar observation. Involvement of such partners is executed to avoid potential conflicts and is demonstrated by no administrative appeals of projects. Cameras monitor the air quality in our wilderness and surrounding areas. We have Burn Plans for prescribed burning.

Endangered Species Act - ESA compliance is ensured through Forest oversight of project design and implementation, and close coordination with US Fish and Wildlife Service. Although project level compliance has been maintained, several recent court cases have determined Forest Plan compliance with ESA has not been maintained. This situation includes the Lincoln because consultation with the Service was not initiated at the time of listing each new species since 1986. Over the past year, this has been remedied to the extent practicable.

Other Laws - The Forest maintains a Federal Facility Compliance Program database which tracks projects that may be in violation of several acts, including CERCLA and RCRA. This database is monitored by the Forest Service and the Environmental Protection Agency. Monitoring is documented in the database.

The Snow Canyon and Ski Apache ski areas are informally and formally monitored to ensure permittees perform required lift inspections, maintain proper insurance, and

adhere to safety precautions and requirements per the American National Ski Industry Standards.

5. UPDATE OF RESEARCH NEEDS.

Summary of Ongoing Activities with Rocky Mountain Forest and Range Experiment Station: A strong partnership has formed between the Lincoln National Forest and the Rocky Mountain Experiment Station. In some instances, the Forest is only an indirect partner, providing support to studies initiated by other agencies such as the study of noise impacts from low-level helicopter overflights on Mexican spotted owls, funded by Holloman Air Force Base (approximately $500,000). For this study, scientists specially designed the project to include analysis of chain saw noise for future application to management on the Lincoln. The following are some of the recently finished or on-going studies being conducted on the Forest:

Mexican spotted owl prey ecology, Sacramento Mountains
Habitat use of Mexican spotted owls
Replacement of the Continuous Forest Survey with establishment of study plots on a 5,000 meter grid across all ownerships within the National Forest boundary.
Effect of small scale disturbance on prey of the Mexican spotted owl in the Sacramento Mountains
Ecological analysis of old-growth montane conifer forests of the Sacramento Mountains
Ecosystem needs assessment
Hazard rating southwestern white pine blister rust
Site and stand factors associated with the occurrence of roundheaded pine beetle outbreaks in Ponderosa pine
Reconstructing forest history in mixed conifer and adjacent forests, Sacramento Mountains
Decay dynamics and ecology in the mixed conifer ecosystem of the Sacramento Mountains
Regional dendroecology research
Area application of Verbenone to reduce the mortality of Ponderosa pine by roundheaded pine beetle in the Sacramento Mountains
Study of noise impacts from low-level helicopter overflights on Mexican spotted owls
Mexican spotted owl distributions in relation to human activities in the past decade: an analysis of accommodation on two 7.5 minute quadrangles

Informal information sharing occurs between scientists and Lincoln personnel, especially at the district level. Additional technology exchange occurred when Dr. Claudia Regan, Dr. Merrill Kauffman, and Laura Huckaby gave formal presentations to the Lincoln's managers and specialists on the ecological analysis of old-growth montane conifer forests of the Sacramento Mountains, ecosystem needs assessment, and reconstructing forest history in mixed conifer and adjacent forests, Sacramento mountains projects.

Summary of Ongoing Activities with Universities - University research projects are also conducted on the Lincoln National Forest. The Lincoln may be directly involved by contributing to project design, funding, or providing personnel or facilities. In other cases, the Forest may only be indirectly involved by processing the appropriate permits which enable projects to occur on National Forest land. The following projects include both direct and indirect university research occurring on the Forest.

Through a cost-sharing agreement with Texas A&M, herpetology baseline information has been collected for Last Chance Canyon.

For the Cloudcroft Area Sustainable Tourism (CAST) program, New Mexico State University completed and analyzed three surveys: 1) residents, 2) commercial users, 3) National Forest users to ascertain tourism trends, resident attitudes toward tourism, and economic impacts. The University of Wisconsin and the University of Colorado are currently working on the CAST program. This partnership received a

national grant of $5,000 through the Rural Community Assistance Program.

The Southeast Experimental Station at Clemson University is working on a National Recreation-use Survey on the Smokey Bear Ranger District. The District is one of 30 districts throughout the U.S participating in this survey. The objective is to develop statistically sound ways of reporting visitor numbers for the National Forest System.

The University of Colorado is working on a paleontology project on the Guadalupe Escarpment. The project involves excavating the cave sediment to analyze the bones and charcoal. This project is helping the Lincoln to describe the ecology of the area for the past 9,000 years.

The Gonzaga University is conducting a study on the salamander, Aneides Spp. The study is of the hormonal influence on morphological evolution.

New Mexico State University grad students are working on a projects involving calculating the growth of pinyon in the pinyon-juniper type and studying soils respiration on the Agua Chiquita area.

The University of New Mexico (UNM) is working on a project which injects tracers and studies the results of surface water to ground water interaction on the Rio Penasco. UNM and Rocky Mountain Forest and Range Experiment Station conducted a conservation assessment of the Sacramento Mountain salamander.

Information Needs - Information needs for the Lincoln National Forest occur at multiple scales: from landscape to organism. The following are relationships, processes, and species about which more or better information would greatly enhance management of the Forest.

- How do motorcycles affect Mexican spotted owls?
- What are the landscape effects of white pine blister rust. Are there individuals or groups with resistance? Can resistance be created through genetic manipulation?
- How Rocky Mountain elk are using the landscape and how they affect other plants and animals (willows, cows) and systems (riparian).
- Historic fire regimes and how fire affects all landscapes, from alpine to xeric (especially riparian).
- We have a need for research of better building materials for trails for handicap accessibility.
- To help restore natural fire into the Sacramento mountains, behavior, affects, and prescriptions for fire are needed for mixed conifer forests (75% of Lincoln commercial-forest land).
- To implement requirements of the Mexican spotted owl recovery plan we need micro monitoring - habitat changes, and macro monitoring - population changes.

6. EVALUATION OF EMERGING ISSUES AND IMPORTANT SOCIAL AND RESOURCE TRENDS, AND DISCUSSION OF PLANNED MONITORING AND EVALUATION EFFORTS DESIGNED TO ADDRESS THEM..

Issues Being Litigated

The Lincoln National Forest is currently involved in Regionwide litigation but no Forest-specific litigation.

National Forest Management Act Consistency - The Ninth Circuit Court of Appeals

issued a new injunction effective July 25, 1997, that limits some timber and grazing activities on R-3 forests. In December 1996, the Forest Service was sued by Forest Guardians and the Southwest Center for Biological Diversity over implementation of standards and guidelines of forest plan amendments which became effective in June, 1996. The Court ruled the FS is enjoined from: 1. approving new forest management activities; 2. executing new instruments for the use and occupancy of National Forest land and resources; and 3. implementing national forest activities; if any of the three are inconsistent with the "new forest plans."

Wild and Scenic Rivers Act Consistency -Preservation interest groups have filed suit alleging several Region 3 forests, including the Lincoln, have failed to comply with the Wild and Scenic Rivers Act. Relief requested is an analysis and determination of eligibility and restraint from activities which could potentially preclude eligibility especially on the Agua Chiquita, Blue Water Creek, Rio Penasco, Rio Bonito, and Sacramento River.

The Lincoln will analyze and determine the eligibility for nomination under the Act of, especially, the Agua Chiquita, Blue Water Creek, Rio Penasco, Rio Bonito, and Sacramento River, and other waterways as appropriate.

Issues Being Appealed

The only administrative appeal in 1997 was by preservation interest groups which alleged the decision to issue a grazing permit for the Black River Grazing Allotment violated the National Forest Management Act (NFMA) on two counts: 1) key forage areas had not been identified and violated Forest Plan standards and guidelines and 2) a grazing suitability analysis was not done and violated NFMA.

The District Ranger's decision was upheld. However, the issue was later raised Regionwide in the litigation described above.

Appeals from previous years help to highlight issues which need to be closely reviewed during Plan Revision and include:

- requiring a permit for commercial use of Forest roads
- timber harvest in old growth forests
- thinning pinyon-juniper woodlands using chaining

Alignment with Other Agencies

On Forest rangelands, competition between elk foraging and livestock grazing is an emerging issue. The issue is the appropriate population size of elk and the assessment of elk forage in determining livestock grazing capacity. The New Mexico Game and Fish and Lincoln National Forest developed agreements and guidelines on habitat management for a number of key species during Plan development. These guidelines are the topic of on-going meetings of the Forest and Game and Fish and will provide information for determining elk numbers and forage utilization.

National/Regional Scale

A number of trends are occurring in the Southwest that affect Forest Plan direction, goals, and objectives. Demographics are shifting to an older population, and there will be a continually increasing influx of people of all ages from outside the area. This trend includes an overall transition from a public which desires commodity-oriented products and services, to a public which wants programs and program delivery to be amenity-oriented. Results of this shift include an increase in the kind and number of recreation opportunities, accessibility to all publics, and an ever-increasing sensitivity to macro- and micro-environmental issues.

This shift in demographics indicates that Lincoln National Forest customers are changing in terms of what they want, expect, and need from programs delivered. At issue is the need for the Forest Service to re-assess who those customers are and how best to serve them. The Lincoln's customers include those from New Mexico, West Texas (including El Paso), and Mexico.

With this anticipated influx of people, comes the resource infrastructure necessary to support increased populations, especially in desert environments of the Southwest. Sustainability of regional hydrogeologic systems is an emerging issue which must be assessed. Management strategies to maintain sustainability must be developed and implemented. For the Lincoln, this assessment must include the hydrogeologic systems which support a growing population especially in Alamogordo, Ruidoso, and Pecos River watershed needs.

Improving forest health is an issue which includes preparing landscapes for reintroduction and restoration of natural fire into appropriate ecosystems. At issue are identifying geographic areas where this can be done within allowable risk, gaining acceptance of our stockholders, and developing the strategy and tools to successfully implement that strategy. Other related issues include:

- How can we restore natural fire and maintain State smoke management standards?
- How can we minimize smoke-related impacts to urban and rural publics?

Local Scale

Wildland-urban interface - Improving the wildland-urban interface is an issue which is being addressed now, and will continue. The mountain communities of Ruidoso and Cloudcroft and other subdivisions are surrounded by forests which are at high risk of catastrophic wildfire. Public awareness programs are ongoing, and implementation strategies are being developed. Safely restoring natural fire into adjacent ecosystems is a part of long-term solutions which need to be developed.

Landscape analyses are being performed on the Smokey Bear and Sacramento Ranger Districts, including vegetation surveys to identify priority treatment areas. Heritage resource information is being gathered through landscape and project-level surveys.

Forest Health - In addition to historic suppression of natural fire in the Lincoln National Forest, a number of forest insects and disease have contributed to the vulnerability of the Forest to catastrophic wildfire. Dwarf mistletoe, spruce budworm, white pine blister rust, and bark beetle, although a natural change agent, appear to be occurring at rates higher than that of a healthy forest environment.

Vegetation surveys continue to be completed and help identify priority areas for analysis and treatment. This information also needs to be used to help identify and map old growth. Rocky Mountain Station conducts a host of research projects on the Lincoln, including the most recent white pine blister rust project.

Watershed and Riparian Health - Key to a sustainable healthy forest ecosystem are properly functioning watershed and riparian systems. Historic railroad logging across watersheds, and settlement activities (such as farming) in riparian areas, significantly altered these systems in the early 1900's. Although most of these systems have recovered remarkably, many still need improvement to regain their full natural function. Related issues emerging on the Lincoln include:

- identifying and managing water rights
- restoring fisheries functions where appropriate
- water quality

Surveys are being completed to identify the location and condition of existing riparian areas. Properly functioning conditions are also being assessed. For key projects, baseline watershed quality information is being collected.

Collaborative Stewardship - Working more collaboratively with local partners has emerged as a priority issue over the past few years. Lincoln and Otero counties have implemented Land-use Plans and established Public Land-use Advisory Committees. These groups frequently interact with the Forest at strategic and project levels. Emphasis remains high on collaborating with them and is demonstrated by memorandums

of understanding focused on NFMA and NEPA planning between the Lincoln and Otero and Lincoln Counties. Other collaborative efforts evolving from this issue include the Cloudcroft Area Sustainable Tourism and the Cloudcroft Townsite designation. New relationships with these partners are breaking some traditional barriers to collaborative stewardship. Other related emerging issues include:

- identifying and addressing needs of growing communities in and adjacent to the Lincoln National Forest
- continuing to deliver programs which balance amenity, commodity, and lifestyle needs
- developing effective relationships with the Mescalero Apache Tribe
- expansion of military use areas that may conflict with the needs of local communities
- cave research involving medical research will increase

The Lincoln has identified many key community contacts and continuously conducts informal monitoring through personal contacts. Past monitoring include formal interviews with these partners and documented feedback. At a minimum, formal annual meetings are held with County leaders to exchange information and discuss planned projects. For more information, see Item 7.

Transportation System - Access to and within the Lincoln National Forest is an issue which continues to become more complex. Differing missions and perspectives of multiple agencies involved in rockfall protection along U.S. Highway 82 elevated visual resource management as an issue. A number of monitoring and evaluation trips were conducted in an effort to resolve this issue. Changing social conditions in the community of Timberon led to a Federal Highway Administration improvement project on the Sacramento River Road. Since implementation of the Plan in 1986, this road has become the major thoroughfare to Timberon and has been described by many of its residents as a safety hazard. In addition, the road has become a school bus route for Cloudcroft Schools. Implementation of the proposal may require a Plan amendment. This amendment has been drafted and is under consideration of the US Fish and Wildlife Service, Federal Highway Administration, and Lincoln National Forest. Other transportation issues include:

- The accessibility to all users needs to be improved through improved road and trail systems management.
- Off-highway vehicle use is increasing and needs to be addressed.
- With the aging population, there is an increased need for higher maintenance levels of Forest roads.
- Trends are toward more and better signing.
- Lands adjacent to the Forest boundary, especially Alamogordo, are being developed as residential subdivision and some traditional access to the Forest is being denied along these interfaces.
- Demand for rights-of-way across Forest land is increasing.
- Jurisdictional questions of many roads are being resolved (eg RS 2477) but many remain at issue.

The Forest continues to work collaboratively with County leaders to find solutions to jurisdiction questions. RS 2477 opportunities have served as a tool to replace costly and controversial rights-of-way procedures in meeting Forest Plan goals.

7. BRIEF DISCUSSION OF CURRENT AND POTENTIAL MONITORING PARTNERSHIPS.

Current Partnerships

Other Federal Agencies - Monitoring partnerships with other Federal agencies include sharing operations and maintenance monitoring of roads between the Lincoln National Forest and Bureau of Land Management. A similar agreement exists between the Lincoln and the National Park Service. Heritage resource survey work is shared with Holloman Air Force Base. Where monitoring is completed for projects in proximity, the expertise is shared between the Lincoln and the BLM. The Natural Resources Conservation Service shares dam inspection duties with the Forest. A noxious weed management partnership involves 12 agencies in the effort to aggressively deal with noxious weeds on the Lincoln. MOU's formalizing this partnership include monitoring

and evaluation actions. The Lincoln has shared services with the BLM and Park Service in surveying for Lee's pincushion and Kuenzler cacti. Cave condition monitoring is done in cooperation with the Park Service.

State of New Mexico - New Mexico Environment Department assists the Forest in identifying key watercourses and helps collect water quality data. In 1997, information was collected in areas of Fresnal Canyon, La Luz Canyon, and Rio Ruidoso. We are currently working with the Environment Department on 319 grants for the Sitting Bull Falls and Rio Penasco are watersheds. We are developing 319 grant proposals for the La Luz watersheds.

The State is doing monitoring work on fisheries. This work involves shocking (on a sample basis) to measure and weigh the fish.

Counties - Cooperative agreements with the counties allow us to share most operational and maintenance monitoring. This work includes bridge inspections, borrow pit sources, and the exchange of GIS information. Improved communication has been emphasized to avoid management conflicts that sometimes occur.

Local Partners - Several individual volunteers help monitor trail conditions. In cooperation with the Southwest Natural and Cultural Heritage Association, volunteer John Stockert has monitored, documented and mapped the condition of most of the trails on the Forest. Groups such as the Boy Scouts also provide feedback on trail conditions. The Pit project involves volunteers who come to do surveys. Survey quality doesn't meet archeological requirements but allows volunteers a chance to learn and helps us gather information. Operational monitoring is enhanced with information provided by the general public stopping in, writing, or using comment cards.

Range condition and permitted-use studies are being conducted on the Sacramento Allotment. The New Mexico Range Management Task Force is a partner in monitoring the study and supporting techniques.

The Alamogordo Chapter of the Wild Turkey Federation assists us in monitoring and maintaining 10 - 12 Sikes project sites.

We are providing hydrology technical expertise to the Rio Ruidoso Watershed Association. We work in cooperation with them also providing assistance in developing their monitoring strategy.

The Rails-to-Trails group monitor use and conditions of the Trestle Recreation and various trails. Our campground concessionaires monitor use and condition, and public service. The Prairie Dawgs monitor use and conditions on the Rim (National Recreation) Trail. Many of our visitors monitor conditions in the Forest. They stop by our offices to report such things as condition of toilets and powerlines, and activities involving livestock and wildlife.

Potential Partners - Agencies and groups with which partnerships could be established or strengthened include:

All existing partnerships could be strengthened
Universities
Flickinger Center for the Performing Arts
Chamber of Commerces
Vision Forest-Space Center
Ruidoso Public Water Group
Sunspot Observatory
Sierra Club
Southwest Natural and Cultural Heritage Association
Native Plant Society
Otero County Soil and Water Conservation District

8. DISCUSSION OF BARRIERS TO EFFECTIVE MONITORING AND EVALUATION, AND STRATEGY TO ADDRESS.

The predominant barriers overriding effective monitoring and evaluation have been higher priority work and a perceived lack of funding. Another barrier has been the perception that monitoring can only be complex, scientifically designed, and rigorously evaluated activities. Many of the monitoring activities we have institutionalized are not even recognized internally as monitoring. These perceptions are compounded because there has not been a Forest, Regional, or National strategy which clearly and efficiently links existing efforts or identifies stratified actions which could serve multiple organizational or resource levels.